

CLAIMS

What is claimed is:

1. A method in a data processing system for facilitating reuse of data blocks, the method comprising the steps of:
 - receiving from a client program a data block request identifying a data block;
 - obtaining constituent data that comprises the data block and deriving a data block identifier from the constituent data;
 - determining whether the data block is a registered data block in a collection of data blocks using the data block identifier;
 - when the data block is not a registered data block, registering the data block in the collection of data blocks;
 - generating a registration reference for accessing the data block; and
 - returning the registration reference to the client program.
2. A method according to claim 1, wherein the step of receiving comprises receiving from the client program a request data object comprising a data block identifier and at least one of the data block and a pointer to the data block.
3. A method according to claim 1, wherein the step of deriving comprises the step of generating a codeword based on the constituent data.
4. A method according to claim 3, wherein the step of generating a codeword comprises the step of generating a CRC codeword.

5. A method according to claim 3, wherein the step of generating comprises the step of generating an ADLER codeword.

6. A method according to claim 3, wherein the step of deriving further comprises the step of deriving the data block identifier based additionally on data block characteristic information.

7. A method according to claim 1, wherein the collection of data blocks is a linked list of data blocks.

8. A method according to claim 1, wherein the step of receiving comprises the step of receiving the data block request at a registration server from a requesting program.

9. A method according to claim 1, wherein the step of registering comprises the step of adding the data block to a linked list of additional data blocks that comprises the collection of data blocks.

10. A method according to claim 1, wherein the step of generating a registration reference comprises the step of generating one of a pointer and a handle to the data block.

11. A method according to claim 1, wherein the step of generating a registration reference comprises the step of generating a registration handle object comprising a reference to a resource allocated for the data block.

12. A method according to claim 11, wherein the resource is one of a memory area allocated for the data block and a process started in connection with the data block.

13. A method according to claim 3, wherein the step of determining comprises the step of comparing the data block identifier against additional data block identifiers for additional data blocks in the collection of data blocks.

14. A method according to claim 1, further comprising the steps of:

determining whether the data block was previously transmitted to a client terminal;

when the data block was not previously transmitted to the client terminal, retrieving the data block using the registration reference and transmitting the data block to the client terminal; and

when the data block was previously transmitted to the client terminal, transmitting a prior transmission indicator to the client terminal that identifies a client local copy of the data block.

15. A computer-readable medium containing instructions that cause a data processing system to perform a method for facilitating reuse of data blocks, the method comprising the steps of:

receiving from a client program a data block request identifying a data block;

obtaining constituent data that comprises the data block and deriving a data block identifier from the constituent data;

determining whether the data block is a registered data block in a collection of data blocks;

when the data block is not a registered data block, registering the data block in the collection of data blocks;

generating a registration reference for accessing the data block; and

returning the registration reference to the client program.

16. A computer readable medium according to claim 15, wherein the step of receiving comprises the step of receiving from the client program a request data object comprising a data block identifier and at least one of the data block and a pointer to the data block.

17. A computer readable medium according to claim 15, wherein the step of deriving comprises the step of generating a codeword based on the constituent data.

18. A computer readable medium according to claim 17, wherein the step of generating a codeword comprises the step of generating a CRC codeword.

19. A computer readable medium according to claim 17, wherein the step of generating comprises the step of generating an ADLER codeword.

20. A computer readable medium according to claim 17, wherein the step of deriving further comprises the step of deriving the data block identifier based additionally on data block characteristic information.

21. A computer readable medium according to claim 15, wherein the collection of data blocks is a linked list of data blocks.

22. A computer readable medium according to claim 15, wherein the step of receiving comprises the step of receiving the data block request at a registration server from a requesting program.

23. A computer readable medium according to claim 15, wherein the step of registering comprises the step of adding the data block to a linked list of additional data blocks that comprises the collection of data blocks.

24. A computer readable medium according to claim 15, wherein the step of generating a registration reference comprises the step of generating either a pointer or a handle to the data block.

25. A computer readable medium according to claim 15, wherein the step of generating a registration reference comprises the step of generating a registration handle object comprising a reference to a resource allocated for the data block.

26. A computer readable medium according to claim 25, wherein the resource is one of a memory area allocated for the data block and a process started in connection with the data block.

27. A computer readable medium according to claim 17, wherein the step of determining comprises the step of comparing the data block identifier against additional data block identifiers for additional data blocks in the collection of data blocks.

28. A computer readable medium according to claim 15, further comprising the steps of:

determining whether the data block was previously transmitted to a client terminal;

when the data block was not previously transmitted to the client terminal, retrieving the data block using the registration reference and transmitting the data block to the client terminal; and

when the data block was previously transmitted to the client terminal, transmitting a prior transmission indicator to the client terminal that identifies a client local copy of the data block.

29. A method in a data processing system for facilitating reuse of data blocks, the method comprising the steps of:

generating at a requesting program a request data object based on a requested data block, the request data object including at least one of binary data of the requested data block and an initial reference to binary data of the requested data block;

communicating the request data object to a determination component;

receiving at the determination component the request data object;

obtaining a request data block identifier derived from constituent data of the requested data block;

determining, based on the request data block identifier, whether the requested data block is a registered data block represented by an existing request data object in a request data object collection;

when the data block is not a registered data block, registering the request data object in the collection of data blocks by creating a new request data object

based on the request data object and inserting the new request data object into the request data object collection;

generating a registration handle object for accessing the data block, the registration handle object comprising at least one of the binary data of the requested data block, the initial reference to binary data of the requested data block, and an existing reference to binary data of the requested data block; and

returning the registration handle object to the requesting program.

30. A method according to claim 29, further comprising the step of releasing duplicate resources allocated to the requested data block.

31. A method according to claim 29, wherein the step of obtaining the request data block identifier comprises the step of obtaining a codeword derived from the constituent data.

32. A method according to claim 29, further comprising the steps of:

allocating a temporary memory area for the requested data block;

analyzing a memory reference in the registration handle object to determine whether the memory reference points to other than the first temporary memory area; and

releasing the temporary memory area when the memory reference points to other than the first temporary memory area.

33. A method according to claim 29, further comprising the steps of:

determining whether the requested data block was previously transmitted to a client terminal;

when the requested data block was not previously transmitted to the client terminal, retrieving the requested data block using the memory reference and transmitting the data block to the client terminal; and

when the data block was previously transmitted to the client terminal, instead transmitting a data block identifier to the client processing system that identifies a client local copy of the data block.

34. A data processing system comprising:

a memory comprising a determination component comprising instructions that ascertain whether a requested data block is represented by existing registration data objects based on a data block identifier derived from constituent data of the requested data block, a filing component comprising instructions that register the requested data block with a new registration data object when the requested data block is not represented by existing registration data objects, and a handle object component comprising instructions that return a registration handle object to a requesting program that specifies a resource associated with the requested data block; and

a processing unit that runs the determination component, filing component, and handle object component.

35. A data processing system according to claim 34, wherein the determination component further comprises instructions that obtain a request data block identifier codeword.

36. A data processing system according to claim 34, wherein the determination component further comprises instructions that obtain a request data block identifier CRC codeword derived from the constituent data.

37. A data processing system according to claim 34, further comprising an analysis component comprising instructions that examine the registration handle object to determine whether a client terminal received the requested data block in response to an earlier request.

38. A data processing system according to claim 37, further comprising instructions for transmitting a prior transmission indicator to the client terminal in lieu of binary data of the requested data block when the client terminal has received the requested data block in response to an earlier request.

39. A data processing system according to claim 34, further comprising instructions for releasing duplicate resources allocated to the requested data block based on a resource reference provided in the registration handle object.

40. A data processing system for facilitating reuse of data blocks, the data processing system comprising:

means for receiving from a requesting program a request data object that identifies a data block and for determining whether the data block is registered in a data block collection based on a data block identifier derived from constituent data of the data block;

means for registering the data block in the data block collection;

means for generating a registration handle object referencing the data block and transmitting the registration handle object to the requesting program.

41. A computer readable memory device encoded with a data structure accessed by a registration server program run by a processor in a system, the data structure comprising:

a linked list of registration data objects, each registration data object comprising:

a data block identifier derived from constituent data comprising the registered data block, wherein the program examines the data block identifier to determine a match to a requested data block requested by a client program.

42. A computer readable medium according to claim 41, wherein the data block identifier comprises a CRC code.

43. A computer readable medium according to claim 41, wherein the data block identifier comprises an ADLER code.

44. A computer readable medium according to claim 41, wherein the registration data object further comprises at least one of a client terminal identifier and a client terminal request identifier.

45. A computer readable medium according to claim 41, wherein the client request identifier is a sequential request number.

46. A computer readable medium according to claim 41, wherein the registration data object further comprises a plurality of client terminal identifiers each associated with a client terminal request identifier.

47. A computer readable medium according to claim 41, wherein each registration data object further comprises a registration data object pointer for forming a linked list of registration data objects.

48. A computer readable medium according to claim 41, wherein each registration data object further comprises a data block reference to a registered data block.

49. A computer readable medium according to claim 41, wherein each registration data object further comprises a data block reference to a registered data block.